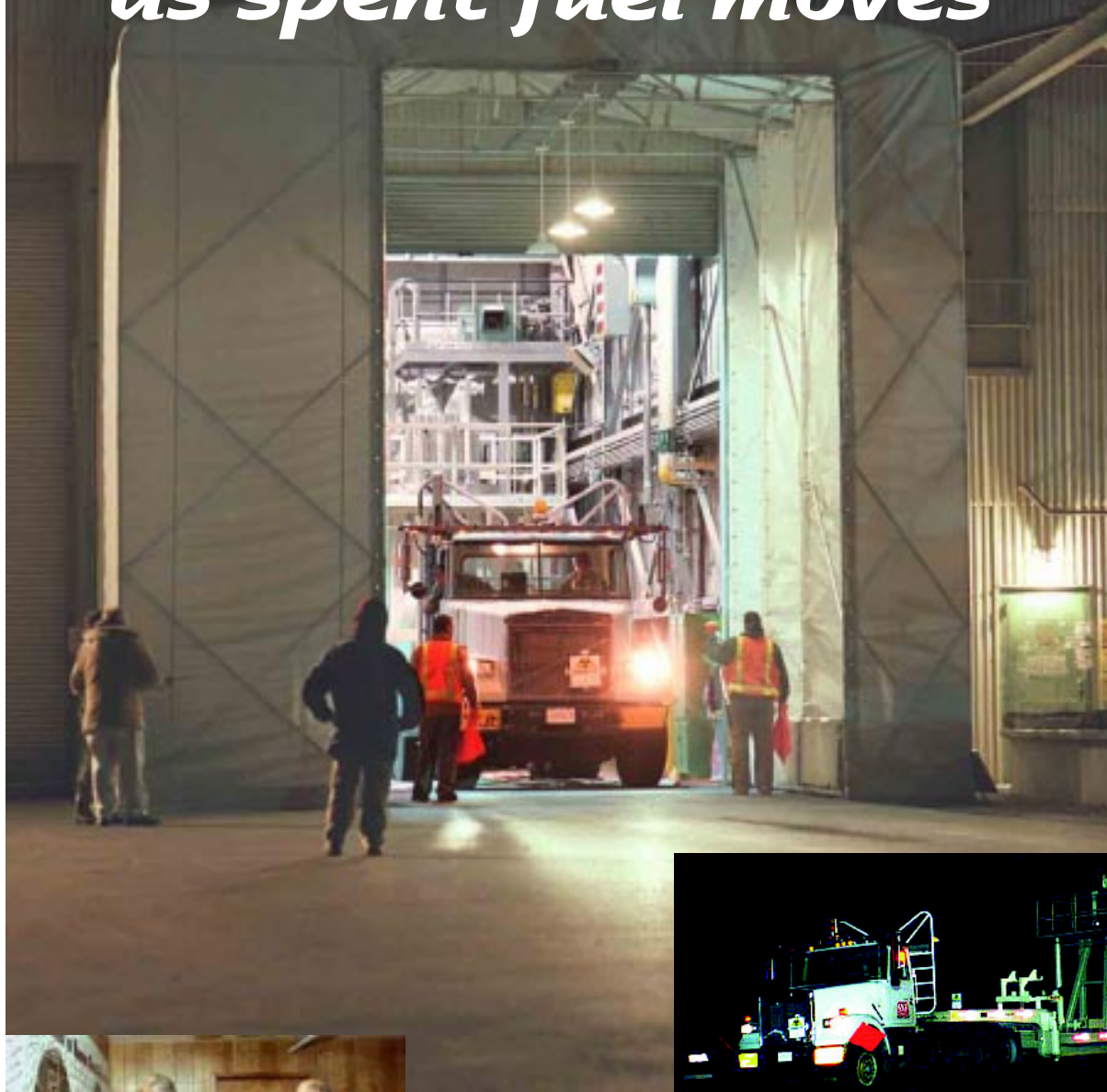




# *Hanford cheers as spent fuel moves*

(At left) The transport trailer bearing the first Multi-Canister Overpack loaded with spent nuclear fuel pulls out of the K West Basin's loadout bay door and (Below) heads for the Cold Vacuum Drying facility.



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Fluor Hanford President Ron Hanson signs a large poster already containing signatures of nearly 800 Spent Nuclear Fuel Project employees. Looking on are, left to right, Keith Klein, manager of the DOE Richland Operations Office, Dave Van Leuven executive vice president of Fluor Hanford and Phil Loscoe, director of Spent Nuclear Fuels for DOE-RL.

# *First movement of spent fuel makes history*

Michele Gerber, FH

Removal of the first Multi-Canister Overpack, or MCO, loaded with spent nuclear fuel from the aging K Basins, began just before 8 p.m. on Dec. 7, marking a huge cornerstone event in Hanford's mission of moving wastes and special nuclear materials away from the river and into the site's central plateau.

A group of dedicated SNF Project workers, along with high-level officials and guests, cheered and hugged in the biting evening cold as the special transport vehicle pulled away from the transfer bay door on the west side of the K West Basin.

Next, the transport loaded with the 30-ton MCO and cask full of irradiated fuel stopped for a final inspection about 20 feet outside the K West facility. Then, teamsters Doug Curtis and Ramiro Cantu eased the huge cargo slowly toward the nearby Cold Vacuum Drying, or CVD, facility.

## **Big win for Northwest**

"The Columbia River is safer tonight than it was this morning," said Department of Energy Richland Operations Office Manager Keith Klein after the MCO was safely moved. "Every shipment of spent nuclear fuel out of the K Basins lessens the risk to the river and illustrates our commitment to safeguard our workers, the environment and the surrounding communities. In addition, the Spent Nuclear Fuel Project is the cornerstone of our work to restore the Columbia River corridor. When the project is complete in 2007, about 99 percent of the radioactivity will have been removed from the river corridor. That's incredibly significant, and certainly underscores the importance of what we've begun here today."

Ron Hanson, president and chief executive officer of Fluor Hanford, which oversees the project for DOE, thanked exhausted SNF Project staff members, many of whom had been on extended duty when the first transport left the K West Basin.



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**In the K West Basin, SNF Project workers, in radiation protection clothing and fall protection harnesses, install the locking ring and prepare the first MCO for loadout.**

Continued on page 3



"I am incredibly proud of the SNF Project employees, and they should be extremely proud of themselves," Hanson said. "They have been and continue to be the foundation of our successful completion of this project. They sacrificed their personal time for many months, gave their all and could not have done better."

Dave Van Leuven, Fluor Hanford executive vice president and chief operating officer, moved his office to the 100K Area last July, and has devoted all of his time to the SNF Project since then. Weary but happy, he said, "We have just achieved a tremendous feat — a feat that is unparalleled in the recent history of the DOE complex. We have constructed two new nuclear facilities, made major modifications to a third, older nuclear facility, and successfully taken all three nuclear facilities through the startup process simultaneously. This accomplishment surpasses anything I am aware of in the recent past for nuclear facilities being brought on line."

### A farewell to arms

To the crowd of reporters, project officials, regulators and invited guests who gathered Dec. 7 in a special briefing room near the K West Basin, Van Leuven reiterated the special significance of the date. "American entry into World War II began exactly 59 years ago today with the bombing of Pearl Harbor on Dec. 7, 1941. World War II led to the development of nuclear weapons, and in turn led to creation of the legacy of nuclear waste and special nuclear material that lies at Hanford.

"Today, on the first Dec. 7 of the 21st century, we are coming full circle and taking a historic step to clean up these legacy materials, safeguard them and build a new future."

The 105,000 irradiated nuclear fuel assemblies in K East and K West Basins — legacy materials from N Reactor production in the 1970s and early 1980s — represent approximately 95 percent of the radioactivity in Hanford's 100 Area, the reactor production area along the Columbia River. The 2,300 tons of fuel in the two basins contain about 55 million curies, a measure of radioactivity.

By comparison, there is one curie in about 300 pounds of natural uranium. By volume, the same tonnage of fuel in the K Basins would contain only about 14,000 curies if all of it were natural, unirradiated uranium. However, irradiation in N Reactor increased the radioactivity.



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A radiation control technician reads detection instrumentation as SNF Project workers decontaminate the immersion pail that surrounds the MCO and cask just prior to their removal from the K West Basin.

Each MCO full of irradiated fuel that leaves the 100K Area moves about 150,000 curies of radioactivity away from the Columbia River shoreline. So each shipment represents a significant risk reduction to the river corridor and moves Hanford closer to the strategic plan to “shrink” the site’s high-curie materials into a consolidated area away from the river.

According to Hanson, “Fluor Hanford is aggressively pursuing rivershore cleanup and is extremely proud that SNF Project work is making such tangible, measurable progress in risk reduction along the Columbia.”

### Teamwork with regulators

Removal of all of the fuel assemblies from both the K West and K East Basins is scheduled to be completed by the end of July 2004, the date set in Hanford’s Tri-Party Agreement signed by DOE, The Environmental Protection Agency and the Washington State Department of Ecology. The agreement further specifies that the entire project will be completed by Mid-2007.

Within the Tri-Party Agreement structure, the EPA is the lead regulator for the SNF Project. EPA’s Hanford project manager Doug Sherwood and the agency’s SNF project manager Larry Gadbois were present in the 100K Area throughout much of the day on Dec. 7. Sherwood said he was “extremely pleased” with the achievement. “I would like to personally thank all of the employees who have worked so hard to reach this important goal and I look forward to the continued success of this project,” he said.

### Tension, memories, triumph

A live video feed of the workers preparing the first MCO and cask for transport in the K West Basin was provided for reporters from around the Northwest, key SNF Project workers, support staff and dignitaries gathered in the briefing room in the 100K Area throughout that historic Thursday.

At other Hanford and off-site locations, groups gathered around computer screens as the live video was fed to selected Internet ports. A Fluor Hanford employee who is the wife of a K West Basin operator watched her husband and his crew on screen with her fingers tightly crossed.

Jim Mathews, manager of the K West Basin; Jim Klos, manager of the Cold Vacuum Drying facility where the fuel will be dried inside the MCOs; and Oly Serrano, manager of the Canister Storage Building where the fuel will rest in dry storage for many years, worked all day taking small groups on tours. They were busy explaining the engineering processes to guests and checking on their facilities. Jim Wicks, SNF Project director for Fluor Hanford, observed the work from the K West Basin deck — pacing like an expectant father.



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The first MCO, inside a shipping cask, is lifted out of the K West Basin late on the afternoon of Dec. 7. The MCO and cask, loaded with nearly 300 fuel assemblies and water, weighed nearly 60,000 pounds.



Participants on the basin deck included senior supervisors John Kimbrough and Tom Ruane; shift managers Adam Seldow and Ken Johnson; operators Darren Barichello, Mike Hammer, Duane Lee, Russ Hammond, Jeff Bailey, Tony Judkins and Kevin Playter; radiation control supervisors Arlo Holbrook and Jerry Kurtz; and radiation control technicians T.J. Woffinden, W.J. Richter, Jenni Richter, Colleen Timney, Mike Knudsen, Steve Van Slycke, Randy Boast, Gordon Hendricks and Eva Maggard.

Once the first MCO and cask reached the CVD facility that night, responsibility passed to Klos and his crew of shift managers, operators, health physics technicians and support staff. Immediately, CVD personnel began their receipt procedures.

Removal of the water inside the MCO began on Dec. 9, following a day and a half of preparations. Water removal continued in a cyclical drying/pumping/condensation/pressure-testing process through Dec. 11, when the proof-of-dryness test for the first MCO was completed. Transport of the first MCO and cask to the CSB was scheduled to occur today, Dec. 14, weather permitting.

### SNF Project challenges

Hanford's spent nuclear fuel, which comprises 80 percent of DOE's total remaining spent fuel, has been acknowledged for the past several years to be one of Hanford's most serious environmental hazards — perhaps second only to tank waste in risk and volume. Located about 35 miles north of Richland, the K Basins are two 47-year-old indoor rectangular structures, each 125 feet long, 67 feet wide and 21 feet deep.

Although spent fuel is routinely dried and stored at nuclear power plants in many parts of the world, the work being done on Hanford's SNF Project has never been attempted anywhere before. The fact that the Hanford fuel is solid uranium metal — not an oxide powder or in pellet form like most commercial nuclear fuel — is one key factor that makes the job one of the toughest and riskiest in the cleanup universe.

**Workers applaud as the transport trailer carrying the first MCO and cask full of irradiated spent fuel eases out of the K West Basin's west door just before 8 p.m. Dec. 7.**



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Additionally, about 6,000 of the fuel assemblies are severely corroded (literally crumbling and falling apart), and about half of the total number have some damage including cladding that is not intact.

Just handling, washing and re-packaging the damaged fuel presents challenges never before confronted in nuclear work. Also, reactions between uranium from breached fuel assemblies and water over the years have produced about 50 cubic meters of sludge that swirls around the fuel when disturbed, clouding the water and creating additional challenges.

When the Hanford SNF Project was created in 1994, work began on upgrades to the basins themselves, including enhanced water filtration systems and painting of nearby work surfaces with contamination sealants and fixants to reduce radiation doses to workers.

During the years between 1994 and 2000, the SNF Project staff designed and built two brand new facilities (currently the two newest nuclear facilities in the DOE complex) and completely refurbished the K West Basin with millions of dollars worth of new first-of-its-kind equipment.

### A safe project

In November 2000, employees of Fluor Hanford and its subcontractors attained two million safe work hours without an injury requiring a workday to be lost. In April 2000, project employees had attained one million safe work hours for the second time since April 1999.

Wicks is especially proud of this safety record. "During years of extremely challenging work, particularly the last two years," he said, "SNF Project safety performance has been outstanding. When you consider the sheer magnitude of the work accomplished, as well as the fact that this is complicated, first-of-its-kind work, the safety record becomes even more impressive."

Summing up the huge achievement just attained with the beginning of fuel movement out of the K West Basin, Phil Loscoe, DOE-RL director of the Office of Spent Nuclear Fuels, said, "This is the beginning of the end for the SNF problem along the Columbia River."

Loscoe reminded all parties, however, that the day's events were just the start of a difficult, arduous process. "The process of loading, drying and moving the K Basins SNF will be going on for almost four years," he said. "The movement of the first MCO out of the K West Basin on Dec. 7 can almost be compared to a launch of the space shuttle. We still need to keep focused, keep working safely and bring the shuttle home. That's going to require our continued best efforts."

More information about the Hanford Spent Nuclear Fuel Project can be found at <http://www.hanford.gov/doe/snf>. The *Hanford Reach* will continue to follow SNF Project developments closely over the next several weeks. ♦

